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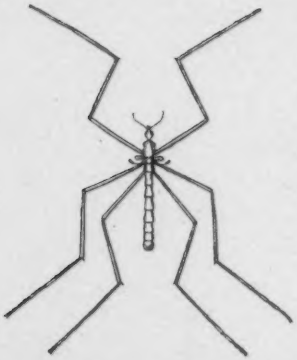

Limnophila aspidoptera Coquillett.

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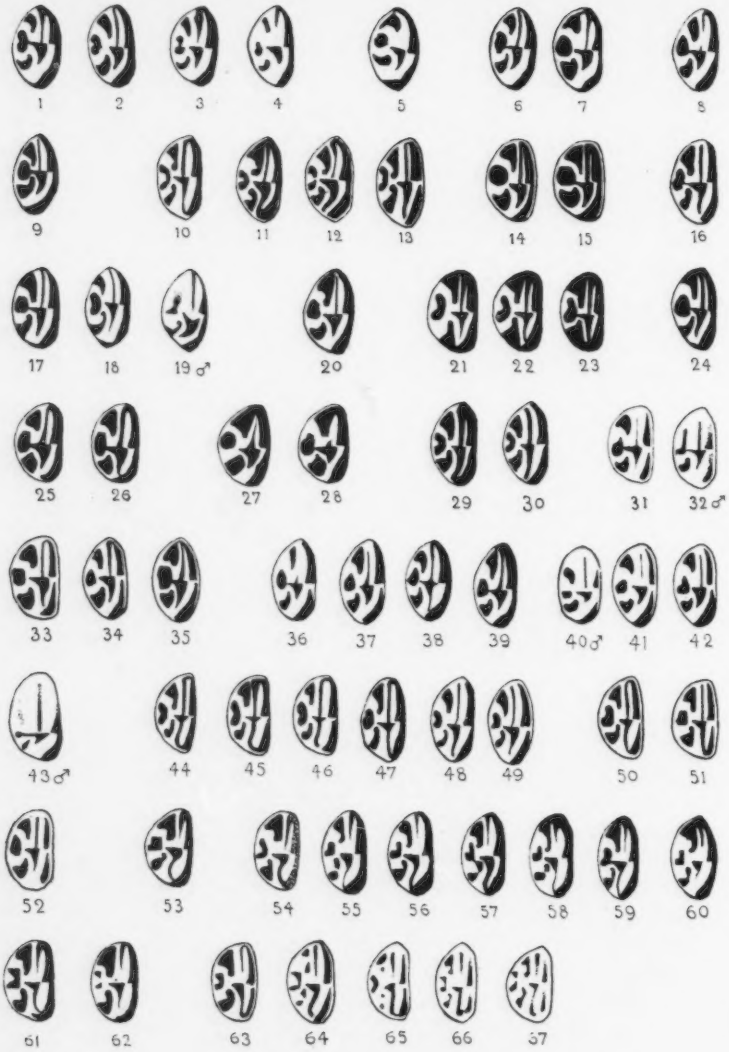

EYE MACULATIONS OF THE GENUS CHRYSOPS.

All figures are taken from females except those marked ♂.

1- 4 *C. celer*
5 *C. fugax*
6- 7 *C. niger*
8 *C. amazon*
9 *C. plangens*
10-13 *C. nigribimbo*
14-15 *C. brimleyi*
16 *C. montanus*
17-19 *C. callidus*
20 *C. delicatulus*
21-23 *C. dimmocki*
24 *C. indus*
25-26 *C. morosus*
27-28 *C. hilaris*
29-30 *C. bistellatus*
31-32 *C. moechus*
33-35 *C. obsoletus*
36-39 *C. univittatus*
40-42 *C. fallax*
43 *C. mœrens*
44-49 *C. vittatus*
50-51 *C. sequax*
52 *C. striatus*
53 *C. cursim*
54-60 *C. pudicus*
61-62 *C. brunneus*
63-67 *C. flavidus*

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XVII. FEBRUARY, 1906. No. 2.

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On the Eye-Coloration of the Genus Chrysops.

BY E. DAECKE.

(Plate 1.)

Little has been recorded on the eye-maculation of *Chrysops*, yet every student of this interesting genus, when in doubt of where to place a specimen will examine the eyes in order to obtain additional information to separate it from its allied forms.

Baron Osten-Sacken, in his Prodrome, Part 1, page 369, has briefly referred to this character.

The fact that the design disappears as soon as the insect is dried makes it inconvenient for study, and to relax the specimen, which will bring the image back again to some extent, is done at the risk of ruining it. This, combined with the fact that the design-variation in some species is so great as to run into and correspond with that of other species, likely has caused students to carefully avoid writing on this subject.

The vast design-variation in the species renders a synoptic

table of this genus by this character impossible, but enough matter of value remains that I deem it expedient to offer these remarks accompanied by the figures, and hope that it may stimulate to further research in this direction.

My observations were mainly made on the New Jersey species, though a few others, so far not recorded from New Jersey, have been figured.

The figures are taken from females except Nos. 19, 32, 40 and 43, which are marked ♂.

The design of the male eye necessarily differs from that of the female. The male eye being holoptic the design is longer and drawn toward the vertex. As a rule it is indistinct in the vertical region or fades away entirely, a reddish bronze lustre frequently taking its place. The upper spot near the frontal margin is seldom recognizable. The middle spot, generally present, rarely corresponds in shape with that of the female. It is generally elongated toward the vertex, in which direction it frequently loses its definite contour. In *C. callidus* the shape of lower frontal spot and its contiguity to the frontal margin (Fig. 19), in *C. moechus* the arrow-head (Fig. 32) betray the identity with their respective females. The male *fallax* resembles the female in its linear shaft which is disconnected from the arrow-head and occipital border (Fig. 40). On account of their scarcity the eyes of males of only a few species have been studied.

The normal eye of *Chrysops* consists of six purple spots on a green ground-color.

1. The occipital border, generally indentated in the middle, along the occipital margin.

2. The arrow-head, in front of the indentation of the occipital border, pointing downward.

3. The shaft, either attached to or disconnected from the arrow-head, upwards.

4. The upper frontal spot
5. The middle frontal spot } along the frontal margin.
6. The lower frontal spot

It does not matter what shape these spots assume or in what manner they combine with each other, these six spots

can always be recognized by their relative positions. There may be two, three, four, five or all connected with each other, thus it will happen that in *C. dimmocki* and *C. indus* all spots are connected in some way. Again there may be as many as ten spots (*C. flavidus*), but it will be readily seen that this greater number is caused by the subdivision of some of the above-named maculations.

The arrow-head and middle spot either coalesce or are separated in the same species (see *celer*, *niger*, *callidus*, *dimmocki*). The same may be said of arrow-head and occipital border below (*nigribimbo*, *dimmocki*, *flavidus*, etc.) The coalescence of upper spot, shaft and occipital border near vertex is equally unreliable as a distinguishing character (*univittatus*, *pudicus*) but the connection and separation of border and occipital margin appear to be singularly permanent; thus in all specimens examined of *flavidus* the occipital border is separated from the margin, while in *brunneus*, a closely allied species to *flavidus*, it is united to it. (Fig. 61 is taken from a New Jersey specimen, Fig. 62 from a specimen from Ohio).

The eye of *pudicus* resembles that of *brunneus*, here the border also joins the occipital margin, but the middle spot is distinctly different from that of *brunneus*. See figure.

The eyes of *pudicus* and *cursim* seem to be identical in maculation. Not enough specimens of *cursim* were procurable to enable me to come to a definite conclusion.

In *brunneus*, *flavidus*, *pudicus* and *cursim* the shaft is always disconnected from arrow-head.

Vittatus has its border joining the occipital margin; in one case only it was found to be partly separated.

All specimens examined of *striatus* and *sequax* had the border separated from the occipital margin.

Niger and *brimleyi* are closely allied species and also have a strong resemblance in their eye-maculation. In *brimleyi*, however, the maculation is very much heavier, the border does not join the occipital margin as it does in *niger*.

This latter character is variable in *nigribimbo*.

Fugax closely resembles *celer*, but can at once be separated from the latter by the absence of shaft. Fig. 5 answers very

well for all specimens examined of *fugax*. Nos. 1 and 2 are the rule, Nos. 3 and 4 the exceptions of *celer*.

About fifty specimens of *plangens* were examined and Fig. 9 suffices for all of them.

The eye of *amazon* resembles that of *celer* but the shaft of *amazon* is curiously divided in the middle, the upper part connected with occipital border, the lower part with arrow-head.

In *fallax* the shaft is generally free, that is, neither connected above or below; in rare cases it is connected with arrow-head. In this species the occipital border is subdivided in the middle, the lower portion of border partly coalesces with occipital margin.

Callidus, *dimmocki* and *indus* are the only New Jersey species in which the upper and lower frontal spots coalesce with frontal margin. The pattern of *dimmocki* is generally very heavy, the green background often reduced to fine lines surrounded by the purple maculation. The design of *callidus* corresponds at times with that of *indus*, but as a rule the lower frontal spot of *callidus* has a tendency to terminate scroll-shaped, which has not been observed in *indus*.

The two figures of *bistellatus* show the extreme range of maculation of all the known specimens.

Delicatulus has often been mistaken for a light and small form of *callidus;* the eye, however, shows decided differences. The upper and lower frontal spots of *delicatulus* are not connected with the frontal margin, the upper spot merges into the occipital border, crowding out the shaft which, at this juncture, is usually disconnected.

Hilaris, which has so far not been recorded from New Jersey, is the only other species thus far examined in which the upper spot joins the occipital border without allowing the shaft its respectively intermediate position, the shaft frequently being abbreviated.

This paper represents the result of only one summer's observations, and there is no doubt that many other variations of the species figured will be found. It remains to be seen to what an extent the widely distributed species will show design-variation from those that have been studied.

The Races of Cicindela tranquebarica Hbst.

By H. F. Wickham, Iowa City, Iowa.

Almost every writer who has had occasion to treat of *Cicindela tranquebarica* Hbst. (*C. vulgaris* Say), makes some mention of the extraordinary range of variation exhibited. Nor need we wonder at this variation, when we consider for a moment the vast extent of country inhabited by *tranquebarica* in some of its many forms. From the lowlands of the Gulf States, Mississippi, Georgia and Louisiana, it reaches northward through the Carolinas to Upper Canada and the maritime provinces. It occupies practically the entire region drained by the Mississippi River and its tributaries, from the Alleghenies to the Rocky Mountains, extending far into the British possessions of Manitoba and Alberta. On the great interior plateau between the Wasatch and the Sierra Nevada, it runs and flies along the scanty streams, or hunts its prey on the bitter flats of the alkaline lakes. To the south the Rio Grande basin is also invaded, and the western outposts, split more or less into beautiful local races, occupy the vales and mountains of the Pacific Coast.

In spite of the differences in size, color and hairiness exhibited by specimens from different parts of the country, it is no easy matter to settle upon characters whereby the races may be accurately defined. In some districts a form may occur which, within a limited area, seems to be definable by features of constancy and apparent importance—and we are tempted into describing it as a new race or subspecies. But in another locality, we find these characters utterly unstable and consequently have to abandon them as bases of subspecific separation, unless we make the citation of a locality label the most important part of our diagnosis.

The separation of the species into "varieties" by Mr. Leng, in his recent "revision" is to my mind, open to certain objections. Some of the characters used are shown by sufficient material to be entirely ephemeral and not confined to specimens from any special district. In one case, I believe, he has

been misled by wrong interpretation of the meaning of an earlier writer. I am also at loss to understand why he sinks *tranquebarica* Hbst. as a synonym, giving precedence to the much later name *vulgaris* Say. If we are satisfied that the name *tranquebarica* was applied by Herbst to this species, the fact of the habitat being wrongly attributed is, under present laws of nomenclature, no valid excuse for its rejection.

It is not my intention to propose new names for any of the numerous local forms, readily enough separable by an experienced eye, though possessing no positive definitive characters; but rather to call attention to some of the districts over which these imperfectly differentiated forms are distributed and the manner in which they again subdivide and intergrade. In general it may be said that the following rules hold good with the aggregate known as *C. tranquebarica* (or *vulgaris*) and its varieties, race or subspecies. Exceptions occur, of course.

1. The specimens from the extreme southeastern portion of the range are small and nearly dead blackish, with scarcely any trace of cupreous on the upper side. A series from North Carolina (given me by Mr. Edw. D. Harris) and from Mississippi, runs only about .50 inch in length. The markings in this form are narrow, the humeral lunule shorter and more transverse than usual.

2. In the upper Mississippi valley, the Middle States, New England and Canada, occurs a larger form, with the upper surface obscurely bronzed or nearly black, the markings broader and better developed, the humeral lunule longer and less transverse. In size the average is about .60 inch. This is presumably the type described as *vulgaris* by Say, and is so called by Mr. Leng.

3. In the more northerly portion of this range, is found occasionally a form more bronzed and a little hairier, called by Mr. Leng, *C. horiconensis*. This name, I think unnecessary, the abberation being illy defined and not a geographical race in the true sense of the word, occurring side by side with the blackish specimens. It also passes insensibly into the next, and I should follow Dr. W. Horn in relegating it to synonomy.

4. In the arid and semi-arid regions of the middle west, from New Mexico through Colorado, eastern Montana, Kansas, Nebraska, Dakota, Manitoba, Assiniboia and Alberta, we find a better marked race of (usually) rather distinctly metallic upper surface, with broad markings, the humeral lunule complete and the middle band frequently expanded on the margin. This is *obliquata* Kirby, and is so recognized by Mr. Leng. It is, however, not very well differentiated, a great number of the specimens being about equally well referable to *obliquata* or to *horiconensis*. Others run into *vibex*. Dr. Horn sinks it as a synonym, and I am disposed to agree with him in this course, recognizing, however, that *obliquata* is much more worthy of being retained than is *horiconensis*. The extreme specimens are very different-looking from the eastern *tranquebarica*.

5. In specimens from the western edge of the ordinary range of the above form, we find a well-marked tendency to partial obliteration of the humeral lunule. As a rule, this is accompanied by a preponderance of the greenish cast in the coloring of the upper surface, until in some portions of the Pacific district and the adjacent interior basin the coppery color is almost entirely replaced by a brilliant green. These green forms have thus been classified by Mr. Leng, in his Revision:

Bright green, humeral lunule broken . . *vibex* Horn.
Brilliant blue-green, humeral lunule lacking . *sierra* Leng.
Dull green, humeral lunule broken . . *roguensis* Harris.

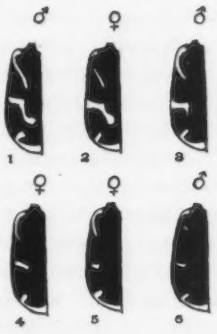
All of these forms are well represented in the material before me, but I do not agree with Mr. Leng in his assignment of names. The types of Mr. Harris' *C. roguensis* were from a locality distant but fifty or sixty miles from that of the type of *vibex* and some specimens of the first named (in my collection) from the Rogue River might well be called rather bright green, though in general they are somewhat dull. I think the name *roguensis* should sink as a true synonym of *vibex*, the distinction being merely the evanescent one of depth or brilliance in color. In fact, so I am told by Dr. Walther Horn, the type of *vibex* is not of the brilliant green of the San Bernardino Co,

(California) specimens, which have been doing duty as *vibex*, but of a duller shade. He writes me of an interesting fact in this connection, of which I was altogether ignorant, namely, that in southern California *vibex* is dimorphic, apparently according to season. He says that the bright green form occurs from May to October, the dull form in April. The explanation, he suggests, may be sought in the effects of the winter rains upon the development of the early spring form. It is worth mentioning that the bright southern Californian specimens are much more brilliant than any of those from Oregon.

C. sierra Leng, the remaining described green form, occurring in the Sierra Nevada, may stand for the time as a fairly well-marked subspecies. It is a mountain race with much reduced markings, but this feature in itself is of little value, as will appear shortly.

Several weeks ago, I received from Mr. Knaus a pair of a bright green species of *Cicindela* taken near Las Vegas, Nevada, by Mr. Tom Spalding. They were of rather smaller size than the average *vibex* (measuring .52 inch), with short humeral lunule, middle band minus the deflexed portion, apical lunule complete. Misled by the general appearance, I at first took them for representatives of a new form of the *repanda* group, but subsequent examination of the labrum and vestiture showed them to belong to the *tranquebarica* series. A request for more specimens brought two others from Mr. Knaus and two from Mr. Spalding, the six representing his whole catch. The remarkable feature of this little collection is that no two of the individuals are alike, but they exhibit among themselves various modifications of pattern from full development to almost the reduced style of *sierra*. The figures annexed will show the gradation. With only 4, 5 and 6, at hand, I should probably have separated a new "race" to be characterized by the small size and the loss of the *tip* of the humeral lunule (a rare feature in the *tranquebarica* aggregate) but the examination of the others induced me to refrain from adding another name. I consider these specimens as belonging to a plastic local race, closely related to the brilliant southern Californian *vibex* (*aut. post.*), showing the intimate relations

of the green races and their probable late development. It will be noticed by those who have plenty of material, that the bright green San Bernardino specimens tend to complete markings, without the interruption of the humeral lunule that should really characterize *vibex*. The discovery of a variable green form in the Great Basin is of much interest, the remarkable influence upon the beetles colonized within its limits having already been touched upon elsewhere. The small lakes, now rapidly drying up, evidently obtained their littoral faunæ from some common source, as I have shown.* Minor modifications of color and pattern, resulting in the formation of more or less important local races are commonly noticed among the faunæ of the various lake shores and *Cicindela tranquebarica* is, in this respect, no exception.



The type of this species found most abundantly in the Great Basin is the form *obliquata* in some of its manifestations —that is to say, a rather widely marked insect of large size, more or less metallic above. There is, however, in Utah specimens, a strong tendency to disappearance of the sub-basal portion of the humeral lunule and the marginal part of the median band, producing an elytral pattern like that of typical *vibex*. Several of my specimens from Provo are almost identical in this respect with others from British Columbia, sent me by Mr. Harris. At Great Salt Lake, Sevier Lake and Humboldt Lake, there seems to be a larger proportion of blackish, almost non-metallic specimens (the ground color of the upper surface being referred to) with moderately wide complete patterns, while at Bridgeport, California (still within the Basin), occurs a form almost dead black above, fully and widely marked, very different in appearance from those of the more eastern portions of the Basin.

I have not seen *C. plutonica* Casey, which is classed by Dr.

*American Naturalist, Sept., 1904. Report Entom. Soc. Ontario, 1904.

W. Horn as a subspecies of *tranquebarica*. It is described from Placer Co., California, and is reported by Mr. Leng as occuring also in Oregon. Accepting Dr. Horn's dictum in regard to the position of this form, my suggested arrangement of the *tranquebarica* series would be as follows :

Cicindela *tranquebarica* Herbst.

Syn.—*vulgaris* Say, *obliquata* Dej., Kby., *kirbyi* Lec., *horiconensis* Leng.

Subsp.—*vibex* Horn.

Syn.—*roguensis* Harris.

Aber.—*vibex* aut. post.

Subsp.—*sierra* Leng.

Subsp.—*plutonica* Casey.

From what has been written concerning the various geographical races and local forms, it will be noticed at once that the species as a whole is more homogeneous in the northern parts of the range, while to the south it tends to split into many imperfectly differentiated assemblages of less than specific value. A nice problem is offered to some student who will undertake to work out the details of probable origin and diffusion of the many types of *Cicindela* in North America.

A New Tabanus Related to punctifer.

By D. W. Coquillett.

Tabanus subniger n. sp.—Near *punctifer* but larger, base of front tibiæ not whitish, abdomen with white hairs along the sides and apex, etc. Black, with a tinge of brown, the mesonotum and scutellum brownish yellow, gray pruinose and covered with white hairs ; elsewhere the hairs are chiefly black except along the sides and apex of the abdomen where there are many white ones which become more numerous posteriorly ; front calypteres also fringed with white hairs. Front very broad above the subcallus with parallel sides, this portion being about two and a half times as long as wide, subcallus opaque, grayish pruinose, callus polished, transversely oval and with an indistinct, linear prolongation above. Eyes bare. Wings gray ; costal cell and stigma pale brown, a brown cloud at base of second submarginal and of the posterior cells. Length, 25 mm.

Lake Forest, Illinois. A female collected March 27, 1904, by Dr. J. G. Needham. Type No. 8301, U. S. Nat. Mus.

Professor Berlese's Apparatus For Collecting Small Arthropods Rapidly and in Great Quantities.

By L. O. Howard.

While visiting the laboratory of Professor Antonio Berlese in Florence in June last, I was greatly interested in an apparatus which he has prepared for collecting small insects and other arthropods very rapidly and in very great numbers, and which it seemed to me obviated in large measure the laborious process known to entomologists as "sifting." He showed me the apparatus practically in operation, and showed me further large numbers of vials filled with Thysanura, Myriapoda, Acarina and the like, which in number and variety afforded a perfect revelation to me. Since returning to this country I have had one of the smaller styles of the apparatus made, and have tested it during the month of December with leaves and rubbish collected on the grounds of the Department of Agriculture and with very considerable success; so much so, in fact, that I wish to bring the apparatus to the attention of English-speaking entomologists. No doubt had I used leaves or top soil of old and long undisturbed wooded regions the results achieved would have been vastly greater than they have with the material tested; but even this, as just stated, has been very satisfactory. Professor Berlese's description and statement concerning results was published in Redia, vol. II, No. 1, shortly after my visit, and his article, very freely translated, is as follows:

Within this last year I have devised an apparatus which is very simple and very effective, with which I collect in great numbers and without fatigue, the small Arthropods as well as insects of all the following orders: Myriapoda, Symphyla, Pauropoda, Chelifera and Arachnida, and especially Acarida however small, without any danger of being able to escape. Of the Collembola, which are so difficult to collect because they spring, I have taken a very great number.

All those living creatures which are found to be present in the mosses, among the dead leaves under the trees, in decaying wood, in humus, in decomposing substances, etc., are col-

lected in a tube containing alcohol, which is attached to the apparatus under discussion, and on the part of the naturalist there is no further trouble than to separate them and study them. The apparatus consists of a large funnel which slides into a glass tube containing alchohol and this funnel is sur-surrounded by water heated to 60° to 100°. On top of the funnel there is placed a sort of square tray of metallic net-work (a sieve) upon which is placed the material to be examined, and this material should naturally be sufficiently humid to restrain the living insects from escaping. Whether

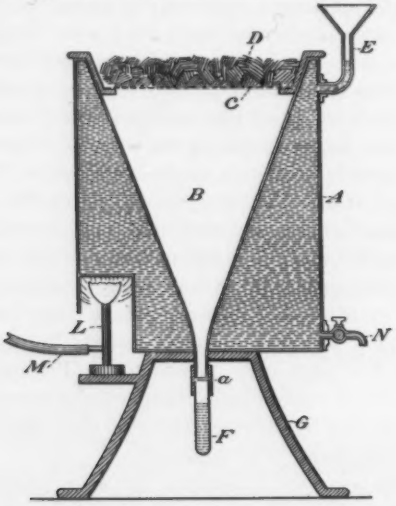


FIG. 1.—Apparatus for direct heating: *A*, exterior receptacle containing water; *B*, interior funnel; *C*, vessel having the bottom of metallic net work; *D*, substance for examination; *E*, funnel for introducing the water; *F*, small glass tube containing alcohol, where the insects are collected, this being connected to the apex of the funnel by a short tube (*a*) of India rubber; *G*, feet supporting the apparatus; *L*, lamp for heating; *M*, India rubber tube for carrying off the gas; *N*, faucet for discharge.

the material in the tray, passing gradually (although rapidly enough) through and losing some of its moisture causes the insects to fall to the bottom, or whether these are attracted by the heat beneath, it is certain that they all try to reach the metallic net and there they pass through, falling into the metallic funnel.

But the walls of the funnel, thanks to the water surrounding them, are so warm that the insects cannot remain, and they fall, rolling downward until they enter the tube containing alcohol, in which only a very small quantity of detritus is collected.

It is necessary, however, not to shake or stir the apparatus or the material during this operation, to avoid the falling of too much detritus together with the insects.

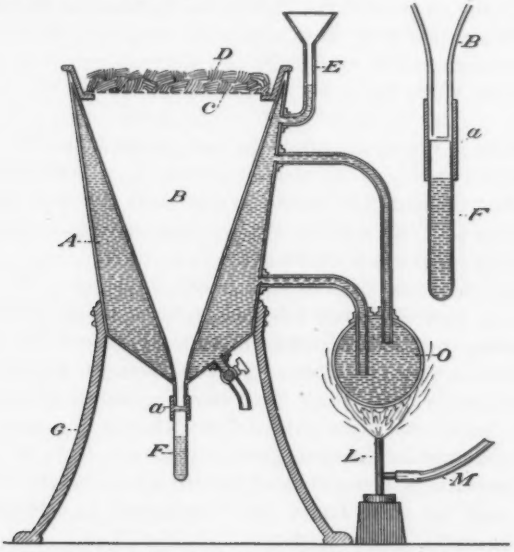


FIG. 2.—Apparatus for indirect heating by means of the boiler (*o*): In the figure at the right we see the manner of inserting the glass tube containing the alcohol into the apex of the funnel, that is by means of a ring or *very short tube of India rubber* (*a*).

The figures, which show two styles of such apparatus, represent in one case (Fig. 1) the heating by direct application, and in the other case (Fig. 2), by means of a species of boiler, always using a Bunsen or an alcohol lamp by which to maintain a high temperature in the water for a long time. As for the rest, any one can vary the construction of the apparatus as he may think best, granting that the walls of the funnel be always much inclined, at least 60 degrees. The diameter of

the funnel should be about a half metre, and the tray itself should be movable in order that it may be refilled with the material when separated from the funnel.

I have used to great advantage a small apparatus of this style (the funnel being only 30 centimetres in diameter) during the last year, and have thus discovered several new species of Italian Acarida, illustrated in this journal, while I have collected an enormous quantity of other small arthropods, especially of Collembola, Symphyla, Pauropoda, etc. (Fig. 1).

These, especially the Collembola, and also the Thysanura all remain on the surface of the alcohol, not becoming submerged, while the other insects all fall to the bottom of the tube.

Thus, it is easy to collect the said Collembola with a brush, from the surface of the alcohol without further disturbance.

After the excellent results secured from the small apparatus referred to, I had another, much larger, constructed which has been operated since November.

It is composed of a case of wood, the interior of which is covered with lead, and has a capacity of six hectolitres, and contains four large funnels in square sections the sides of which are 50 centimetres. Thus I have an extent of one square metre upon which to arrange the material for examination, and I can place four different kinds of material from four different localities on these sieves.

The water is about three hectolitres and is kept at 60° or 70°, and for some hours the temperature is maintained by means of a large gas heater.

This heater which serves me well also for heating the room in which it is placed, consumes about three cubic metres of gas per day, which proves that with an expense of about one lira, I daily obtain without any trouble, a greater number of small insects than ten persons with all the fatigue and patience possible, would be able to collect in the same length of time, and besides, I have the assurance that scarcely an individual insect has escaped. (Fig. 2).

Material to be examined.—Mosses, fallen and decayed leaves, humus, soil under stones, etc., are very rich in various forms

of insect life at all seasons of the year, and this material is treated very easily and with complete success in the apparatus described.

Manure.—The manures, especially from the stable, harbor great numbers of various arthropods which are not easy to collect because of the rapidity with which they escape, and also because the material itself is frequently anything but pleasant to examine.

Instead, with the apparatus, one is certain to secure all the arthropods hidden in the manure, since by their voluntarily seeking the heat, they fall continually into the tube in great numbers.

Myrmecophilous Arthropods.—Everything is caught, even including the ants, by putting upon the sieve some of the earth and detritus from the ant-hills.

Bark from trees.—The effect is marvelous which is obtained by treating the bark from various large trees, in this apparatus.

Under the bark there are found a great variety of insects which hibernate, either in a state of maturity or as larvæ. All these fall into the tube of alcohol almost entirely free from detritus of any sort, so that it is easy to quickly recognize the fauna thus sheltered during the winter by a given tree or a given species of plant.

Green parts of the plants.—In summer, better than in winter, the insects which live upon the foliage can be collected, however minute, by placing this, when fresh and just gathered, upon the sieve of the apparatus.

Parasites of the Vertebrata.—The host being dead and left cold for a few hours (bird or mammal), is then placed upon this apparatus and rapidly loses its exterior parasites (Pulicidæ, Anoplura and Pediculidæ, Acarida, etc.), which being attracted by the artificial heat, abandon the host hastily and fall into the tube containing alcohol.

These researches, otherwise so troublesome and difficult under ordinary methods, are, by this apparatus, effected automatically and with absolute results.

In many other special cases I have obtained extremely useful results from the employment of the described apparatus which I recommend to naturalists.

On Some Aquatic Hemiptera From Costa Rica, Central America.

By J. R. de la Torre Bueno.

It has been my good fortune to become acquainted in the past year, through correspondence, with Professor Paul Biolley, of San Jose de Costa Rica, who has sent me from time to time whatever he has collected for me in aquatic Hemiptera, principally in the Cryptocerata. In this period I have received from him a number of the bugs noted by Champion as from that country and some others not heretofore recorded from that region. They are as follows:

1. **Acanthia sulcicollis** Champion.

One specimen from La Palma, taken in April at an altitude of 1,600 meters. This species is not recorded from Costa Rica in Biologia Centrali-Americana, although it occurs in Guatemala and Panama.

2. **Gelastocoris bufo** Herrich-Schaeffer.

Found abundant on the shores of the Rio Surubres, near San Mateo, at an altitude of 250 meters, on the Pacific side of Costa Rica, in company with the two following species:

3. **Gelastocoris vicinus** Champion.

Rio Surubres near San Mateo.

4. **Gelastocoris** sp. near **vicinus** Champion.

Rio Surubres near San Mateo.

In the present uncertain condition of the specific differences in the Gelastocoridæ it is difficult to pronounce on any distribution, which may or may not be real.

5. **Mononyx fuscipes** Guerin.

One specimen only, taken in the Reventazon Plain, near Santa Clara, on the Atlantic slope. This individual was found in a rotten log in December, 1904. It is an extremely widespread form throughout North and Central America.

6. **Mononyx nepaeformis** Fabricius.

One specimen taken at the same time as the *Gelastocoris* under a stone at the edge of the Rio Surubres, in February. This species extends from Mexico south to the Argentine Republic.

7. **Limnocoris stali** Montandon.

Rio Surubres near San Mateo, one specimen only in February. According to Champion, this species is found in Guatemala, Colombia, Venezuela and Bolivia.

8. **Amorgius colossicum** Stal.

Taken at electric light at San Jose, from which locality it is also recorded by Champion.

9. **Amorgius annulipes** Herrich-Schaeffer.

Taken at San Jose at various times, under electric lights. This species is recorded from as far north as California, and is said to be found in Brazil.

10. **Abedus signoreti** Mayr.

I have received long series of these from Rio Maria Aguilar near San Jose, where it was found in muddy pools, at an elevation of 1,160 metres, in May ; from Vista del Mar, on the Pacific slope, at an elevation of 1,400 metres, in March, and from San Jose in January. These are new localities for Costa Rica.

11. **Belostoma fusciventris** Stal.

An abundant form near San Jose, which is the first Costa Rican record for this bug. Heretofore, it has been noted only as far south as Honduras.

12. **Belostoma micantula** Stal.

Two specimens of this pigmy form were taken in the Rio Surubres in February. It extends from Guatemala to the Argentine Republic.

13. **Notonecta mexicana** Amyot and Serville.

This has come from the Rio Maria Aguilar in January; taken at Vista del Mar in March and in La Palma in April. Both forms, var. *ceres* and var. *hades* Kirk. are represented. The types of the varieties are also from this region and collected by Prof. Biolley.

14. **Buenoa crassipes** Champion.

One specimen from Vista del Mar in March. This form is recorded by Champion from three localities in Guatemala only.

15. **Buenoa pallipes** (Fabricius) Champion.

I have received a long series taken in the Rio Maria Aguilar in January. In Biologia Centrali-Americana it is given from Vera Cruz in Mexico to Darien in Panama. This is now recorded for the first time from Costa Rica.

16. **Buenoa carinatus** Champion.

One example from San Jose. This does not attain the smallest dimensions given by Champion for his species, but in other respects it answers to the description. It is not recorded from further south than Guatemala and Honduras.

17. **Rhagovelia crassipes** Champion.

There is in this lot of insects a female from Vista del Mar, taken in March, which is the first record for Costa Rica. The types were from Panama, where they were found in plenty in two localities.

18. **Rhagovelia armata** Burmeister.

Two females were received from San Jose. Champion records it from Mexico, *fide* Burmeister and Signoret, but evidently did not possess it himself.

19. **Rhagovelia spinigera** Champion.

A long series of this form came to hand from Rio Maria Aguilar in January and San Jose in August. This species was described by Champion from one female example taken in Guatemala. Consequently, this is the first record outside of the published locality.

20. **Microvelia** n. sp.?

This is apparently an undescribed form, of which numbers were taken at San Jose in January.

21. **Gerris cariniventris** Champion.

A good number of this species, both winged males and females and one apterous female were taken at Rio Maria Aguilar in January and May. This is apparently common and numerous from Mexico down.

22. **Gerris (tenagogonus) opaca** Champion.

Two specimens from the Rio Surubres in February. Recorded by Champion as plentiful in Bugaba, Panama, the type locality. Both this and the following are listed under the generic synonym *Limnometra*.

23. **Gerris (tenagogonus) quadrilineata** Champion.

Three or four specimens from Rio Maria Aguilar in January and May. The distribution given in Biologia Centrali-Americana is rather disconnected. This is the first record from Costa Rica.

24. **Potamobates unidentatus** Champion.

One macropterous and two apterous individuals, male and female, from Rio Surubres. Recorded by Champion only from Bugaba, Panama.

Some Notes on the Bee Genus Caupolicana.

By Harry S. Smith, Lincoln, Nebr.

Caupolicana albicollis n. sp.—♂. Length 19-21 mm. Black; head, with exception of the vertex, covered with a long, dense, whitish pubescence, that on the face very slightly ochraceous, that on the occiput snow-white; labrum and mandibles dark rufous, sometimes black, the latter with a dense fringe of long whitish hairs on the lower side; clypeus finely and irregularly punctured except the apex, which is impunctate and narrowly margined; antennæ black, grayish brown beneath; second joint of flagellum longer than style and almost half as long as the remaining portion of the flagellum; malar space short, about one-fourth as long as wide. Thorax finely and closely punctured, mesonotum, as far back as the tegulæ, covered with a short but dense erect whitish pubescence, very slightly tinged with ochraceous; the remaining portion of the thorax black, the hairs on the scutellum and post-scutellum much longer than those on the mesonotum. Abdomen black, opaque, minutely indistinctly punctured; first dorsal segment covered with a long sooty black pubescence like that of the scutellum, 2-4 almost bare excepting their apices, 6 and apex of 5 with long black hairs; segments 2-4 with broad silvery fasciae, that on 2 sometimes slightly narrowed on the disk; ventral segments 2-4 clothed with long white pubescence, the segments with black hairs. Coxae usually with a few long white hairs; femora and tibiæ black, with black pubescence; tarsi ferruginous, covered with a fine short fulvous pubescence, metatarsus black with inner side brownish. Wings smoky hyaline, slightly iridescent, veins and tegulæ brownish black; first and second recurrent nervures confluent with first and third cubital nervures. Length of wing 12-14 mm.

♀.—Similar to ♂, but differs in having the venter black, and in having somewhat broader fasciæ; a short dense black scopa on the posterior legs, metatarsus twice as wide as in ♂. The distance between the eyes at vertex is also about twice that of the ♂.

1 ♀ and 3 ♂ specimens, Mendoza and Bahia Blanca, Argentina (L. Bruner). Collection University of Nebraska.

In the coloration and markings of the head and mesothorax this species resembles *C. lugubris* F. Smith, but differs in having all the femora entirely black and in its greater size.

Caupolicana fulvicollis Spinola.

The ♂ of this species, besides the usual sexual characters, differs from the ♀ in having a white fascia on the fifth dorsal segment, and in having the first four ventral segments clothed with long thin silvery white hairs. In both sexes the pubescence on the first dorsal segment varies from pale fulvous to grayish white, and in no case are the tibiæ and tarsi clothed with black pubescence as in *C. gayi* Spinola, but are bright fulvous, the tibiæ sometimes with a few white hairs on the inner side. The intermediate and posterior femora are usually white, but the anterior femora are concolorous with the thorax.

Dr. H. Friese, in his monograph of the genus in 1898, expresses some doubt as to whether this form is entitled to specific rank, and thinks that it may be a variety of *C. gayi* Spinola. The ♂ was unknown to him, and differs from Friese's description of the ♂ of the *C. gayi* in having a white fascia on the fifth dorsal segment. This, with other minor characters, such as color of pubescence on legs, etc., is sufficiently characteristic to make it distinct.

5 ♂ and 4 ♀ specimens, Cacarana, Argentina (L. Bruner). Collection University of Nebraska.

Caupolicana nigriventris Friese.

One ♂ specimen I have identified as this species, but the white fasciae on the third and fourth segments are wanting on the disc, showing only on the posterior corners of the segments. Probably worn off.

Bahia Blanca, Argentina (L. Bruner). Collection University of Nebraska.

Caupolicana albiventris Friese.

A single ♂ specimen which agrees with Dr. Friese's description in every particular.

Arequipa, Peru, Oct. 28th, 1898 (A. G. Weeks). Collection University of Nebr.

A New Aphid.

By James Troop.

Aphis houghtonensis n. sp.

During the summer of 1904 plant lice were discovered to be very abundant in a field of Houghton gooseberries, near the city of Indianapolis. The peculiar manner in which they worked attracted attention, and specimens were taken and sent to Dr. L. O. Howard, at Washington, who pronounced it a new species. Drawings were accordingly made by Mr. Heidemann of the Division of Entomology.

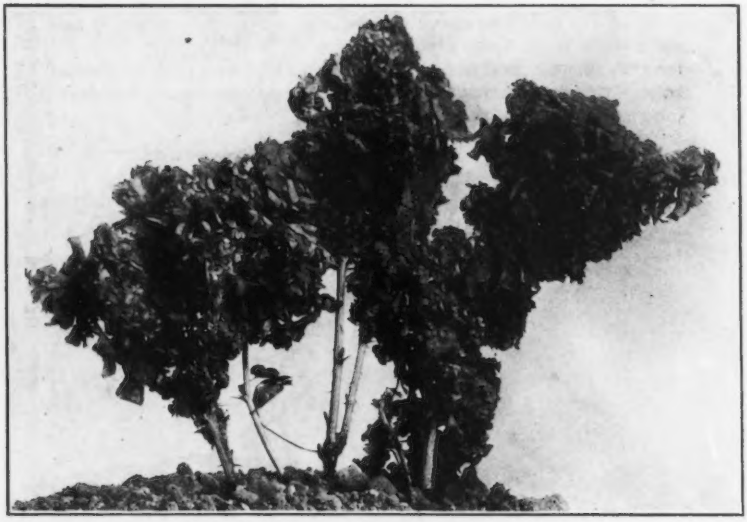


Fig. 1.

In the field of gooseberries mentioned, there were scattering plants of another variety and it was noticed that none of these plants were infested by the *Aphis*. I then made several attempts during the summer of 1904 and also 1905 to colonize them on various other varieties of gooseberry, but in no case did I succeed in inducing them to feed. They multiplied so rapidly, however, upon the Houghton, that the owner was obliged to give up the fight, after two seasons' experience,

and destroy the entire five acres of plants. Hence I have designated it as *Aphis houghtonensis*. Fig. 1 shows the peculiar manner in which it crumples the leaves.

Description.—The wingless females of the summer broods are about one-sixteenth of an inch in length, of a pale green color, and somewhat hairy; eyes prominent; antennæ and legs of a yellowish tint and covered with scattering short spines, except the terminal joint of the antennæ. Antennæ a little more than half the length of the body; honey tubes prominent, nearly as long as from their base to the

FIG 2.

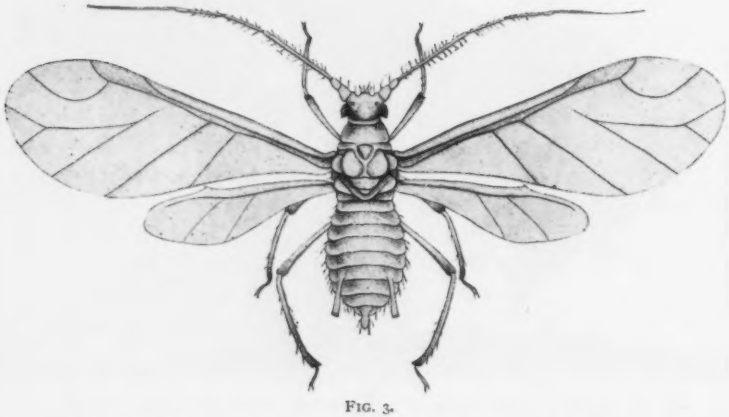


FIG. 3.

tip of the abdomen (Fig. 2). The winged forms measure nearly three-sixteenths of an inch to the tips of the wings when folded. Color of the wings and body a shade darker than the wingless forms; antennæ nearly one-half longer than the body; spread of wings three times the length of the body; eyes somewhat darker than the wingless form, while the legs are not as spiny; honey tubes about the same length in both forms. (Fig. 3).

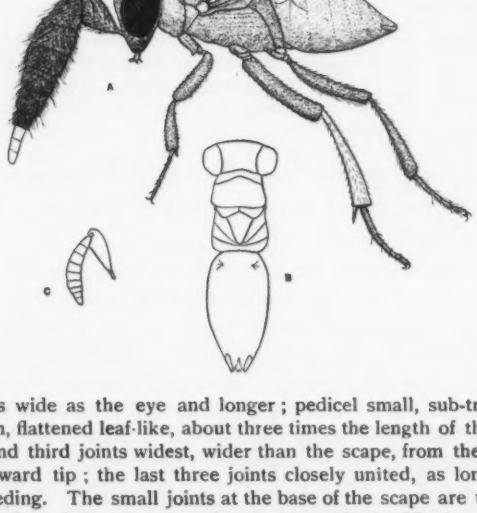
A New Subapterous Encyrtid.

By Charles T. Brues.

In 1900* Ashmead described as *Anusia neomexicana* the first species of this genus known to occur in North America. At this time I have the pleasure of describing both sexes of a second North American species from Central Texas.

Anusia xerophila sp. nov.

Male.—Length, 1.2 mm. Yellowish ferruginous, legs more yellowish, middle tibiæ white. Antennæ black, except the scape above which is brown, and the apical three joints, which are snow-white. Head slightly rostriform. Mandibles dark at tips, palpi pale, last joint piceous ; lower part of front between the antennæ slightly elevated but not carinate ; above finely shagreened, the ocelli forming an equilateral triangle, the lateral pair nearly as far from the eye as from each other. Antennæ 11-jointed, large and conspicuous, the scape obovoid, flattened, near



the tip as wide as the eye and longer ; pedicel small, sub-triangular. Flagellum, flattened leaf-like, about three times the length of the scape ; second and third joints widest, wider than the scape, from thence narrowed toward tip ; the last three joints closely united, as long as the two preceding. The small joints at the base of the scape are unusually large, the first of them nearly as long as the pedicel. Mesonotum finely

* Proc. U. S. National Museum, XXII, 1202, p. 355.

shagreened; wings small, finger-shaped, reaching but little beyond the middle of the abdomen. Axillæ just meeting at the base of the scutellum, the latter a little longer than wide, sub-triangular, the tip narrowly truncate and the posterior angles microscopically dentate and black. Abdomen slightly longer than the head and thorax, oval, at the sides of the second segment with a small black tubercle which bears two long black setæ. Legs rather slender.

Female.—Length 1.2–1.3 mm. This sex differs by its smaller head, the eyes being much closer together on the front, and the lateral ocelli nearer to the eye margin. The mandibles are stouter, distinctly bidentate, and the antennæ are wholly black except the upper part of the scape. The flagellum is sub-cylindrical, but little flattened, nearly one and one-half times as long as the scape; the joints wider than long, the last pointed and twice as long as the penultimate. The legs are darker especially the middle tibiæ.

Described from one male and three female specimens collected at Austin, Texas, during May, 1900.

A. xerophila is related to *A. neomexicana* Ashm., but differs by its much shorter scape.

The species was fairly abundant on an arid hill-slope near Austin at the time the types were collected. They were moving actively about in the bright sunshine on the bare parched soil, where other insects were very scarce. Associated with them was found the closely related *Henicopygus subapterus* Ashm.

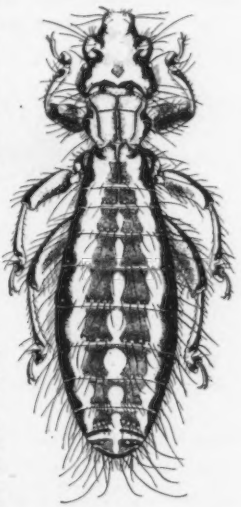
A Gigantic New Biting Bird-Louse.

By Vernon L. Kellogg, Stanford University, Calif.

Gigantic is a relative term; a gigantic new vulture would mean several linear feet of bird, but a gigantic new Mallophagan found on a vulture means but several linear millimeters of insect. As in the fifteen hundred or more species of *Mallophaga* so far known the average or modal length is hardly two millimeters, a species measuring nearly eleven millimeters is truly a giant among its fellows. In 1903 Mr. Charles P. Lounsbury, government entomologist of the Cape of Good Hope, took half a dozen specimens, which "appeared to be all of the creatures present on the body of the host," of a very large biting bird-louse from a Griffon Vulture, *Gyps kolbi*, shot at Nelspruit in the Eastern Transvaal. The specimens represent a species hitherto un-

known to us, and the largest Mallophagan species so far described. The next largest is *Læmobothorium loomisi* Kellogg, length, 9.7 mm., from the Canada Goose, and the next *Lipeurus ferox* Nitzsch, length 9 mm. from the albatrosses.

Læmobothorium gypsis n. sp.—Fig. 1. Three females from a Griffon Vulture, *Gyps kolbi*, taken at Nelspruit, Eastern Transvaal. Description of female. Body length, 10.5 mm.; a strongly-marked species, readily distinguishable by its size and by the unusual projection and narrowness of the clypeal portion of the head. Head with conspicuous protuberant pre-ocular regions, and sharply defined elongate narrow clypeal region; the temples strongly marked and angulated; hairs large and numerous and conspicuous on pre-ocular and temporal lobes; on anterior margin of clypeus two long hairs in each angle and numerous short ones in marginal region; before each eye a single strong hair, and behind eye a distinct row of short, stiffish even spine-like hairs along lateral margin; strong black brown cuticular markings along all lateral margins except antero-lateral angles of clypeus; the black brown marking projecting in and curving so as nearly to set off the pre-ocular lobes; occipital margin strongly, but narrowly, black-brown. Prothorax shield-shaped, with fringe of short hairs along anterior margin and long strong hairs in antero-lateral and medio-lateral angles; also numerous hairs along postero-lateral margins; posterior margin broadly and shallowly emarginate in middle producing two distinct, backward-projecting, obtusely-angled points; strong black lateral marginal markings, widest in middle and tapering out anteriorly and posteriorly. Metathorax like an abdominal segment but twice as long as the true first abdominal segment; strong black lateral marginal border containing a few pustulated hairs. Legs with many strong hairs and with strong markings. Abdomen with strong black lateral borders and each segment with a pair of dorsal, paler, large blotches; these blotches nearly fused on the median line in segment one, but separated on all other segments by a medial uncolored space of curious sub-elliptical or vase-shaped outlines, these spaces larger on the wider segments, and successively wider in proportion to their postero-anterior length as one examines the segments from before backwards; three or four pustulated hairs in the posterior margin of each abdominal blotch, and many hairs, long and short, along the lateral margins of the whole abdomen.



Observations on the Bionomics of Auchmeromyia luteola Fabricius.

By F. C. Wellman, M. D., Benguela, W. Africa.

Published under the auspices of the American Society of Tropical Medicine.

Several years ago I was interested in the native saying that the fly mentioned in the title of this note produces the blood-sucking maggot called "*Inyo*" by the Angola Bantus. When in London, in August, 1904, I submitted several of the flies under discussion to Mr. Austen, of the British Museum, mentioning to him some facts as to their habits He pronounced them to be *Auchmeromyia luteola* Fabr., and called my attention to the communication of Dutton, Todd and Christy to the

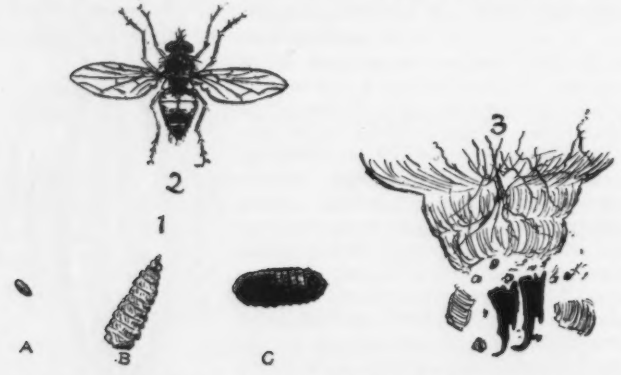


Fig. 1.—Ovum (A), larva (B), and pupa (C) of *A. luteola* Fabr. Natural size.
Fig. 2.—*Auchmeromyia luteola* Fabr. Female natural size.
Fig. 3.—Teased puparation of the cephalic end of larva showing chitinous armature.

British Medical Association concerning the fly's larva. A short time afterwards I read the communication in question in the British Medical Journal under the title "The Congo Floor Maggot."* On my return to Africa I began studying the fly with the object of determining as far as possible by actual observation its general habits and the steps in its metamorphosis.

At first the flies died in captivity, but on discovering

* September 17, 1904, p. 664.

that they will eat fermented vegetable matter I was able to keep them under observation for long periods in cages. They are attracted by the smell of vinegar, maize beer or any sour smell, and may be captured by using paper soaked in vinegar as a bait.

I hope to publish on some future occasion the morphological observations which I have made, so I give here very brief notes on the appearance in the various stages.

THE OVUM.

The ovum* (Fig. 1, A) is light cream color, about 1.5 x 0.6 mm. in size with smooth surface and oval outline.

THE LARVA.

The larva (Fig. 1, B) has eleven segments, mouth parts formed for piercing, and is of a light gray color. Its size ranges from about 0.2 mm. long in very young specimens to 15 mm. in those about to pupate.

THE PUPA.

The puparium (Fig. 1, C) is deep brown in color and is 9.5 –12 mm. in length.

THE IMAGO.

The imago (Fig. 2), first described by Fabricius, is 12–14 mm. in length, stoutly built and of a tawny color with dark markings.

The distal half of the abdomen is blackish. As Mr. Austen informs me that it is common along the entire west coast of Africa,† the name which has been given to the larva—"Congo" floor maggot is manifestly incorrect and misleading.

HABITS AND LIFE HISTORY.

A. luteola is partly domestic and partly sylvan in its habits. When one sits in a native village the flies come buzzing about him, in the evening especially, as if seeking an inhabited spot to oviposit. I, however, saw a number of individuals one evening (Feb. 4th, 1904) in the bush half a mile from any

* From the ovary of a pregnant female

† It has recently been reported from Uganda (*vide* Journal of the Royal Army Medical Corps, November, 1904).

habitation. They were flying about with a loud buzzing noise, settling from time to time on trees, stumps, etc. On watching them I saw several couples *in copula*. I left the spot after sundown and, although dusk was coming on, the flies were still active. The female when ready to oviposit usually enters a native hut and settles on the wall or thatch generally remaining motionless for some time. If undisturbed she alights on the mud floor and begins scratching with her first pair of legs in the dust, preferably in a dark corner. She then lays her eggs in the dust, afterwards scratching again in the same manner as if to cover them. I was fortunate to witness this process on one occasion. I was unable to ascertain the number of the eggs at this time as it was dusk, and, with no means of procuring a light, the eggs could not be seen in the light colored dirt rich in kaolin, which is generally used to plaster walls and floors. The average number of eggs in a series of gravid females dissected was 54.

In my experiments a number of pregnant females were placed in a gauze cage containing a handful of sand which had been sterilized by red heat. In three days there appeared very small larvæ which were identical with the "*Inyo*" or biting maggot found by me in native kraals and often brought by boys collecting for me. I examined the sand with a lens on the first and second days of the experiment but, I am sorry to say, overlooked the eggs. Still I am confident the fly is not viviparous, as the moving larvæ would have immediately caught my eye. Flies dissected, too, even when gestation was complete, always contained ova only.

In natural circumstances the larvæ are most abundant under mats where children who urinate during sleep have lain, showing that either the imagines or larvæ (or both) seek such places as promising sooner or later the presence of suitable blood-producing hosts. The larvæ are voracious blood-suckers and their bite is severe. One bred out from my captive flies, and which I allowed to bite my arm in several places, produced wheals which were the seat of marked burning and itching which did not entirely disappear for four days. The suggestions as to the possibility of the larvæ being the carrier

of disease-producing organisms deserves attention, and experiments with it should be made. The length of time for a newly-hatched larva to arrive at the pupal stage varies greatly with the temperature and available food. A large number of larvæ observed by me in captivity died without pupating. Some lived as long as seven weeks without entering the pupal stage. Although their normal food is human blood yet they will, if carefully handled, bite any warm blooded animal which has been shaved on the part of its body which touches the ground as it lies down. As it bites animals with difficulty, I fed mine on a native boy. Larvæ kept without food die.

Six new pupæ were kept 29, 30 and 31 days before the imagines escaped. The imagines which emerged from the puparia in my experiment were in every case identical with those I had kept in captivity and also with the specimens determined by Mr. Austen.

While I cannot claim to have actually seen every detail in the metamorphosis, yet the method used (breeding out under closed cages in previously heated sand) is guarantee against fallacy and precludes possible heterogenesis; so that we may be assured that we have the full life-history of the fly, which may quite possibly be found to play no unimportant *role* in tropical pathology. I do not know (having been in Africa) whether or not additional work, completing the description of the metamorphosis of *A. luteola* has been published since the paper to which I have above referred. However, I publish this short record of my observation of the life history from imago to imago, since it will at least serve as a confirmation of any work on the subject that may have been done in the *interim*.

REVERIE OF A MOSQUITO.—"It's a hard row to hoe, and for growling this human race is the wonder of the universe. I've got to live as well as the rest of 'em, but if I approach a victim and sing ere I bite, he growls and swears he wouldn't mind it so much if I didn't sing; then if I steal upon him silently he complains that he was hit without warning. And then when the doctors can't discover a fever germ they swear I'm at the bottom of the whole business and have my picture taken and write books about me and make national reputations at my expense. But it's all right, I guess, and I reckon I'll pull through; I'm really an aristocrat in disguise and good blood flows in my veins—in fact the best in the country."

ENTOMOLOGICAL NEWS.

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To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., FEBRUARY, 1906.

The great number of undescribed species of insects in this country made it necessary for those interested in entomology to devote a considerable portion of their time to systematic work and to the description of these forms. There is no doubt that many species have been described from insufficient material without proper data and we have also had the "splitter" with us. Now that the great territory between the Mississippi and the Pacific Ocean is becoming better known and series of good material accumulating, it has become possible to ascertain the true relationship between many described forms. The great desideratum at the present time is an efficient nomenclature that will properly express the relationship of allied forms. The old term variety has been found more or less wanting, but it had the great advantage of showing relationship between names. It is a question whether the trinomial system is much of an advance. Terms like "topomorph" express an idea of evolution but do not necessarily show relationship. We notice recently that a number of persons are compiling data from various collections to get at the relationship of species through distribution, time of appearance, etc., and we will look forward with pleasure to the outcome. Cooperative studies of this kind may give excellent results.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

In my article on "Mosquitoes in Mississippi" in the November NEWS, I inadvertently wrote *niger* for *nigripes* in reference to the fourth species of *Anopheles* taken in the State.—GLENN W. HERRICK, Agricultural College, Mississippi.

EDITORS OF ENTOMOLOGICAL NEWS:—Just a word to acknowledge a few minutes of real enjoyment in reading the letter of Mr. Henry Clay Weeks in the January NEWS. Its very violence makes it unnecessary for me to reply, but I do wish to disclaim any feeling of jealousy. So far as I am aware, Mr. Weeks has never done anything that any one need be jealous of. That he has done and is doing work in New Jersey may be true, because even in New Jersey there are men with more money than brains. As for the rest, my original letter stated facts which are easy of verification. I cannot say the same for the answer.—JOHN B. SMITH.

THE LARVA OF APATELA FUNERALIS G. & R.—The conundrum propounded by Mr. R. F. Pearsall as to the identity of a certain larva found by him but not bred is apparently solved by the above title. Mr. Pearsall describes (ENT. NEWS, xvii, 22, 1906) the spathulate appendages as cream color, whereas they are in reality black, an error possibly induced by their very shiny character. A description of the larva, with references, can be found in Proc. U. S. Nat. Mus., xxi, 103, 1898. Mr. Pearsall's observation of the penultimate stages resembling bird-droppings is new, although the European *A. alni* is known to have this character, and our species therefore should have it also. The observation on construction of cocoon is also new, Harris giving a different habit.—HARRISON G. DYAR.

PELASTONEURUS NIGRESCENS WHEELER, a synonym of *P. dissimilipes* Wheeler; a correction.—Mr. C. W. Johnson has recently called my attention to a singular *lapsus* in my paper entitled: "New species of Dolichopodidæ from the United States." (Proceed. Calif. Acad. Sci. 3rd Ser. Zool. Vol. II, No. 1, 1899). Fig. 21, Pl. 1 is described as the wing of *Pelastoneurus nigrescens* sp. nov. ♀ and Fig. 27, Pl. II as the hypopygium of the male of the same species, but no such specific name is anywhere mentioned in the text. On looking into the matter I find that both of these figures refer to *P. dissimilipes*, which is fully described at pp. 16, 17. *P. nigrescens* is merely a manuscript name for which I substituted *dissimilipes* while writing out the description. I hasten to make this correction as the name *nigrescens* cannot fail to confuse some future students of the Dolichopodidæ. Fortunately it does not appear in Aldrich's valuable "Catalogue of North American Diptera."

W. M. WHEELER.

RARE CATCHES IN EASTERN CONNECTICUT.—I do not think that I ever saw a butterfly on the wing on November 18th before this year, although I have been an interested observer for 35 years. To-day I captured upon my lawn a fair specimen of that rare fly for this latitude, *Vanessa J. album*. It is the first one I ever captured. Mr. Archibald Mitchell has taken three in the past 30 years, and two of them were taken in his dwelling. I was surprised on July 22nd of this year by the sight of *Vanessa milberti* in my garden, and I had the good fortune to capture it. It showed no wear from prolonged flight and was in fine plumage. In 30 years I have only seen one other specimen hereabouts and that was 20 miles north of Norwich. After the middle of October I have had brought to me Drury's *Saturia maia* from the fields as fresh as if just emerged, and I have since thought that their late appearance may make them seem to be rarer than they are. Then there is Drury's *P. epimenis*, which flies here and is taken on the wing as early as April 12th when the temperature is quite cool. Only one example of Drury's *Erebus odora* have I seen, and that was captured in first-class condition. Only one *Junonia coenia* have I ever seen in New England, and that was on a shingly beach at Ipswich, Mass. While *Vanessa J. album* is reported to be rare south of Northern New Hampshire and Maine, I had the luck three years ago on a cool October day to see, when without a collecting kit, a half dozen or more flitting about a trolley car station a few miles west of Taunton, Mass.—A. W. PEARSON, Norwich, Conn.

Doings of Societies.

At the meeting of the Feldman Collecting Social, held December 20th, 1905, at the residence of Mr. H. W. Wenzel, ten members were present and Dr. Molson, visitor. President Daecke in the chair. Mr. Laurent exhibited bred specimens of *Pamphila manataaqua* and *cernes* pointing out how to differentiate the two species, but adhering to Dr. Skinner's remark that they are closely allied specifically, and he asked to know the structural differences by which the two species were placed in different genera by Dr. Dyar.

Mr. Haimbach exhibited some specimens of *Coleoptera* and *Lepidoptera*, taken at Roxborough on December 3rd, under bark. Among the latter there were several specimens of *Phyllocnistis vitigenella* Clem. This species is represented in the speaker's collection by specimens taken at Cincinnati, Ohio, on May 2nd, August 25th and October 9th, and at Roxborough, Philadelphia, on December 3rd.

F. HAIMBACH, *Secretary*.

EXCHANGES.

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☞ These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.

Wanted to Exchange.—Butterflies and moths from every country in the world. Many beautiful foreign specimens to exchange. California specimens in large quantities.—R. C. Winslow, Santa Clara, California.

Wanted.—Insect Life, Vol. iii, 2, 4, 11, 12; iv, 5, 6, 7, 8, 9, 10; v, 3, 4; vi, 3. Also other works on economic entomology not in my library. Will pay cash or exchange.—J. C. Crawford, Box, 208, Dallas, Texas.

Wanted.—Records of Captures of Connecticut insects—especially the rarer species—for the preparation of a State list. Orthoptera and Hymenoptera records desired at once.—W. E. Britton, State Entomologist, New Haven, Conn.

Wanted mounted humming birds and other brilliant colored birds, in exchange for rare exotic, native butterflies and moths, cocoons of *Ceanothi, Gloveri* and pupæ and cocoons of other species.—C. F. Timm, 170 Bleeker St., Brooklyn, N. Y.

Wanted.—Specimens and data concerning parasitism by Strepsiptera (Stylopidæ). Correspondence solicited.—W. Dwight Pierce, Box 208 Dallas, Texas.

Cicindelidæ of the world desired. Good exchange offered.—H. F. Wickham, Iowa City, Iowa.

Coleoptera.—Many rare species offered in exchange.—Geo. W. Bock, M.D., 1221 Morrisson Ave., St. Louis, Missouri.

I have the life history in Riker mounts of *Alaria florida, Utethesia bella, Synchlæ genutia, Vanessa io* and others for exchange.—Carl Ilg, 2539 Douglas St., Phila., Pa.

Wanted for cash, 100 *A. ceanothi* cocoons.—Geo. Kircher, 136 Grace St., Jersey City, N. J.

Luna cocoons in exchange for exotic Lepidoptera.—M. F. Reyher, 1601 Willington St., Philadelphia, Pa.

Cocoons of *S. cynthia, A. promethea* and *A. cecropia* in large or small quantity to exchange for other North American pupæ or Lepidoptera in papers.—John H. West, 2235 E. Letterly St., Phila., Pa.

Coleoptera.—Aleocharidæ of the world wanted. Will give good exchange in California Coleoptera.—A. Fenyes, M.D. Pasadena, Cal.

Correspondence wanted, especially from Southern and Western States, Central and South America in order; to exchange living pupæ and cocoons, also butterflies and moths in papes.—Herman J. Erb, Union Hill, New Jersey.

Wanted.—Cocoons and pupæ of North American Lepidoptera for cash or exchange.—Amer. Ent. Co., 1040 DeKalk Ave., Brooklyn, N. Y.

I have for exchange perfect examples of *Baileya ophthalmica, Scopelsoma devia, tristigmata, Xylina grotei,* and many other local species of Lepidoptera for exchange—Fred. Marloff, Oak Station P. O., Allegheny Co., Pa.

Specimens of the genus *Necrophorus* from all parts of the United States; will give good exchanges in other Coleoptera—J. O. Martin, Wilbraham, Mass.

For Exchange.—Pupae of *Smerinthus geminatus, Dolba hylaeus, Papilio ajax, Eacles imperialis* and cocoons of *Telea polyphemus.*—R. R. Rowley, Louisiana, Mo.

Wanted.—Records of Ontario insects, for compilation of list. Please give authentic data and indicate source of identifications. Lists of smaller orders and Neuropteroids wanted at once.—Franklin Sherman, Jr., Dept. Ent. Ont. Agr. Col., Guelph, Canada.

Lepidoptera: Exchange for specimens new to my collection. Exotics also accepted.—A. Troschel, 853 Irving Park Boulevard, Chicago, Illinois.

Lepidoptera.—Liberal exchange given for desirable North American Heterocera.—Henry Engel, Box 35 Oak Station P. O., Allegheny Co., Pa.

European Lepidoptera in exchange for pupæ of native moths, especially *S. cynthia*.—Miss Kate W. Strong, Setauket, Long Island, N.Y.

Wanted.—*Lycænas*, *Theclas*, *Chionobas* and *Anthocharis*, either for cash or exchange. Send list to H. H. Brehme, 44 Mercer street, Newark, N. J.

Papilios of the world desired. What do you wish in exchange?—C. F. Groth, 141 East 40th street, New York City.

Wanted, for cash or exchange, Bulletins U. S. Bureau of Entomology. Old series 1-5, 7-15, 18, 20, 21, 26, 27, 30, 33. New series 8, 39, Technical series, 1, 3, 5, 6, 7. Bib. Econ. Ent., parts 4, 5, 6.—Albert V. Taylor, Bedford, Ohio.

Wanted.—Bibionidæ of North America for which I will pay cash, also ENTOMOLOGICAL NEWS, Vol. XV, No. 9—W. A. Hooker, Bureau of Entomology, Washington, D. C.

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